A Users Guide for NHDView

Version 1.09, 04/10/2000

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Introduction

NHDView is an ArcView application designed to assist in using NHD workspaces that are in NHDinARC (i.e. ArcInfo coverage) format. NHDView will load and symbolize, based on feature type, all themes in an NHDinARC workspace. NHDView also loads various NHD tables and create links between them. In addition, NHDView contains tools that enable the user to navigate upstream and downstream in the reach network.

NHD data is not bundled with NHDView. NHD data in NHDinARC format and documentation for the data are distributed from the nhd.usgs.gov Web site. The data comes as tarred and compressed ARC/INFO workspace files. You must uncompress and untar these workspaces before attempting to use them in NHDView. Utilities to uncompress (GZIP.EXE) and untar (TAR.EXE) and instructions for doing so are available on the Web site.

NHDView is designed to run under ArcView 3.0a or 3.1 for Windows 95/98/NT. At the present time, a version of NHDView for UNIX is not available. While NHDView has not been formally tested under ArcView 3.2, users have reported that NHDView appears to work correctly under ArcView 3.2.

NHDView will open NHD workspaces that have been created by the NHDAppend utility. These work spaces contain two or more cataloging units in ArcInfo coverage format.

This version of NHDView will not open NHD workspace that have been converted to shapefile format by the NHDarc2shp utility. Shortly, NHDView will be replaced with a set of ArcView extensions. These extensions will operate on both coverage format and shapefile format workspaces.

Installation

NHDView arrives in a tarred and compressed file called NHDView-107.tgz. To install NHDView, uncompress and untar the contents of NHDView.tgz into a directory of your choice. You may use WinZip to do this or you may use the GZIP.EXE and TAR.EXE utilities mentioned above.

Since NHDView is an application that can be used for many NHDinARC workspaces, it is recommended that you do not put NHDView in a directory that contains a specific NHDinARC workspace. The sub-directory that is in the .tgz file must be retained under your chosen directory. This sub-directory, called \info, will be created during the uncompress/untar process. In the remainder of this users guide, it is assumed that you called your directory \NHDView, in which case your directory structure should look as follows:

\NHDView
\NHDView\info

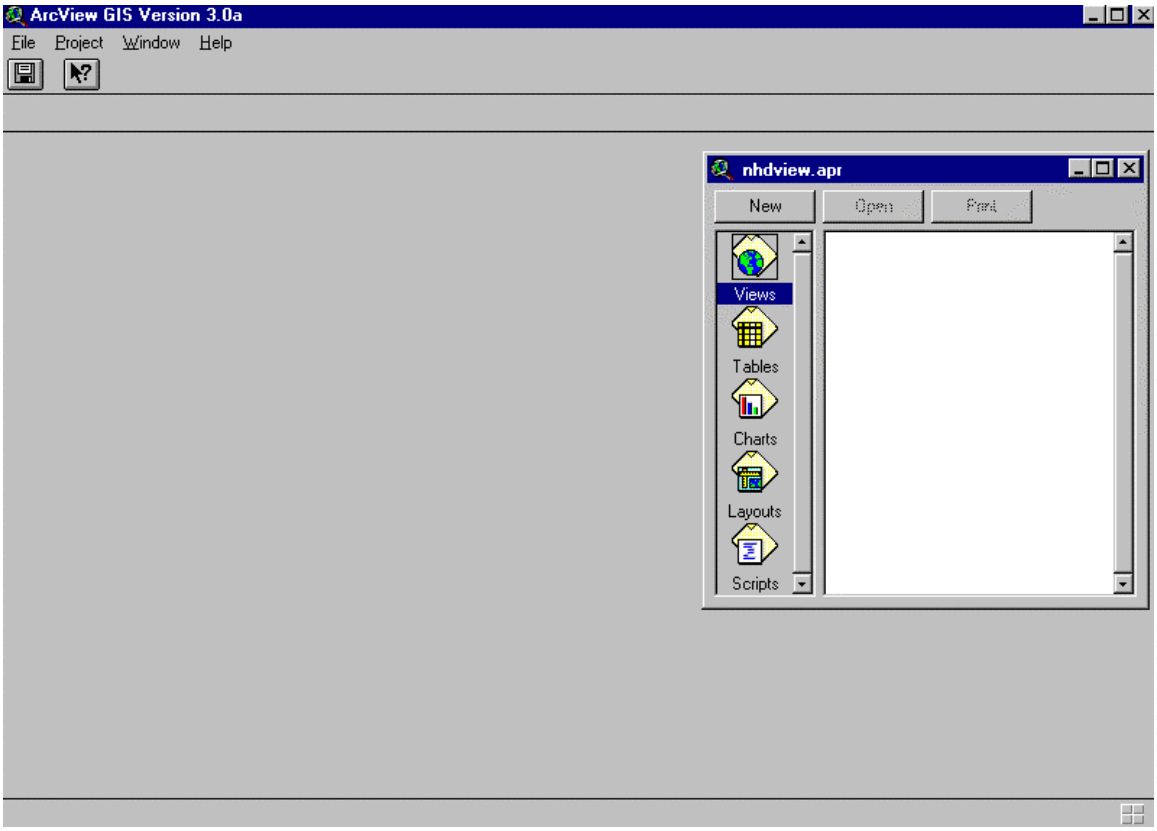
NHDView uses the info directory as a working area to store temporary files. In this way, NHDView avoids invading the NHDinARC data that you have installed on your workstation or server.

Using NHDView

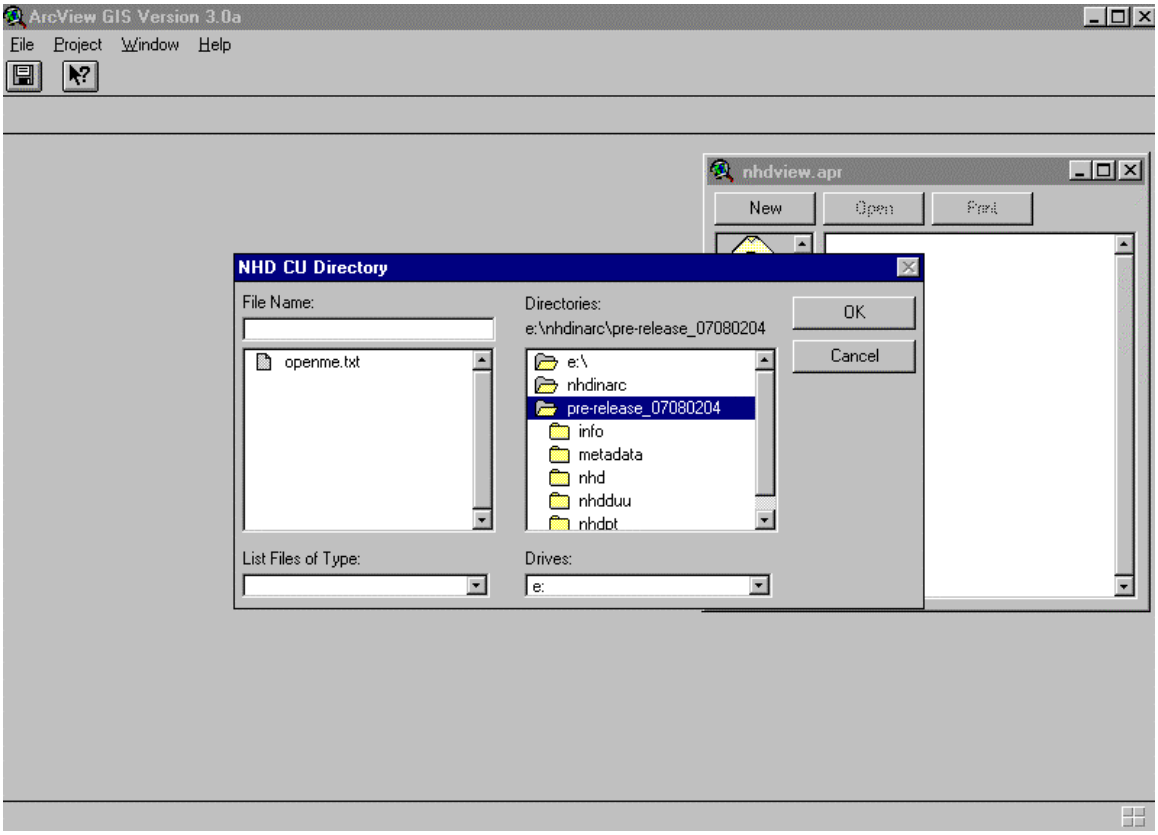
Start ArcView 3.0a or 3.1 under Windows 95/98/NT and open the project called NHDView.apr found in the \NHDView directory. A project window called 'NHDView.apr' will appear. You are now ready to open an NHDinARC workspace.

ArcView is fully functional when NHDView is being used. You can, for example, add your own themes. However, it is possible to break NHDView by doing things like deleting themes/tables from the project or changing the order of the items in a table. Therefore, it is recommended that you use native ArcView functions carefully. If NHDView fails, you should first try closing the workspace using 'Close NHDINARC Workspace' from the ArcView FILE menu and opening it again using the 'Open NHDINARC Workspace' from the ArcView FILE menu. (See instructions below about opening and closing NHDinARC workspaces.) If that does not fix the problem, you may need to refresh your NHDinARC workspace data by untarring it again from the original tarred workspace file or restoring from a backup copy.

Just after opening NHDView, the ArcView window will look like the figure below. Note that the project window indicates that you are working with a project named NHDView.apr.

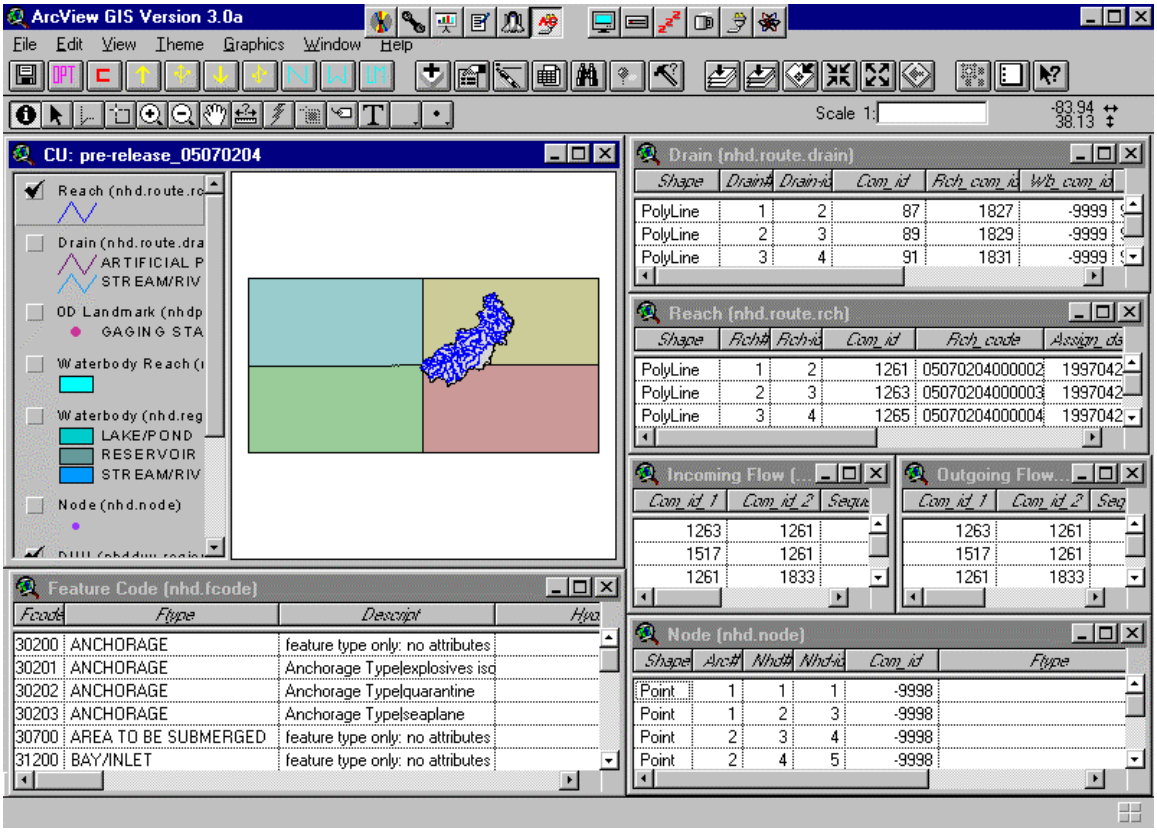


At this point, NHDView is ready for you to open an NHDinARC workspace, by using the ArcView FILE menu and selecting 'Open NHDINARC Workspace'. A standard open dialog will appear as shown in the following figure.



You may use this dialog to select and open an NHD workspace. Each workspace contains a file named openme.txt in the highest level directory of the workspace. To open a workspace with NHDView, simply select its openme.txt file during the open dialog shown above.

Once an NHDinARC workspace is opened, the ArcView window will look like the following figure.



If, at this point, you activate the project window from the list in the ArcView WINDOW menu, you will note that the project window now indicates that you are in a project called 'xxxxxxxx.apr'. This is a project for the workspace that you just opened and xxxxxxxx is that workspace's name. This project has the themes and tables that NHDView opened and contains all of the functionality of NHDView. It is, however, a new and separate project from NHDView. In other words, you have just cloned a project for a specific workspace that is identical in function to NHDView. You may add themes and tables to this project and otherwise customize it without affecting the operation of NHDView itself. When you close this NHDinARC workspace, your active project will once again be NHDView.apr and will be ready to open another NHDinARC workspace. NHDView saves the workspace-specific project (xxxxxxxx.apr) in the \NHDView directory for your future use. In order for this project to continue functioning like NHDView, you must leave it in the \NHDView directory.

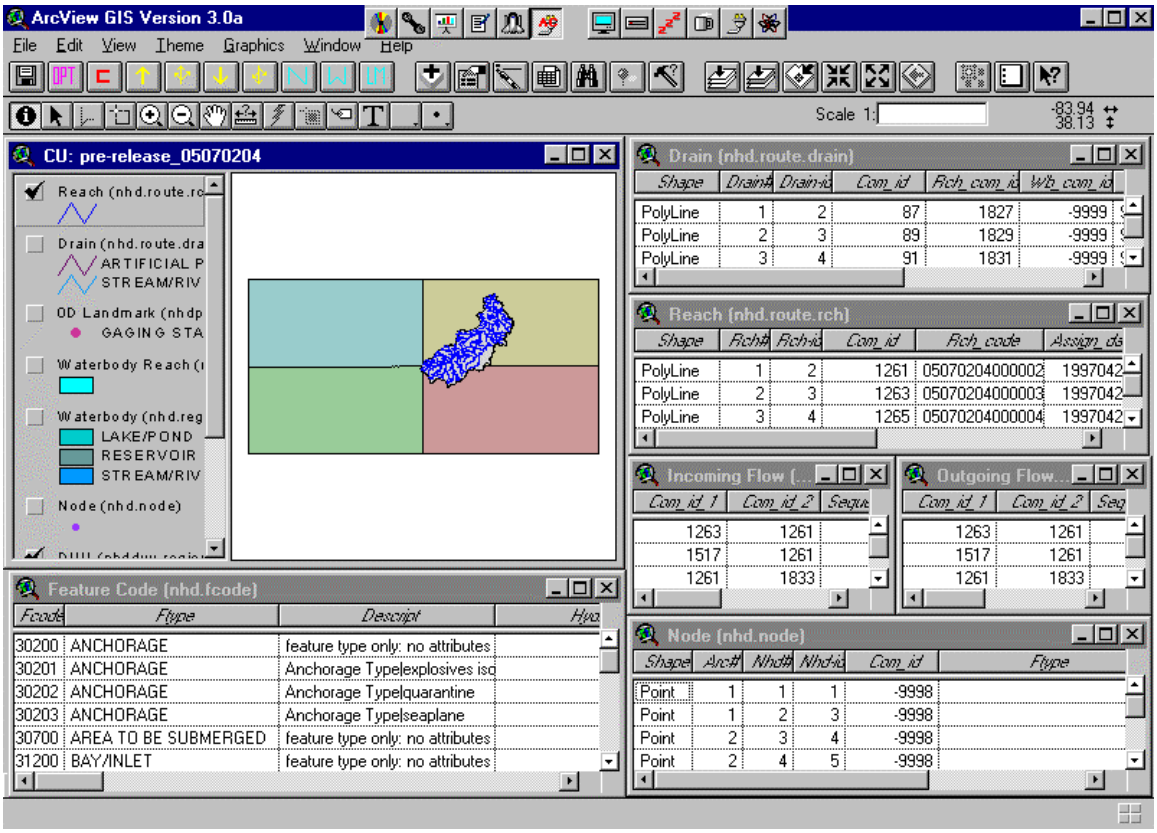
It is recommended that you never save a project called NHDView.apr. Doing so, may write over your installed NHDView.apr thus destroying it. If ArcView asks if you want to save NHDView.apr, you should say 'no'.

From the view window, you can see all parts of the NHDinARC workspace except the tables related to metadata. All of the NHD feature tables are loaded as themes in the view and they are linked to each other according to the NHDinARC schema. The schema can be found on the nhd.usgs.gov Web site.

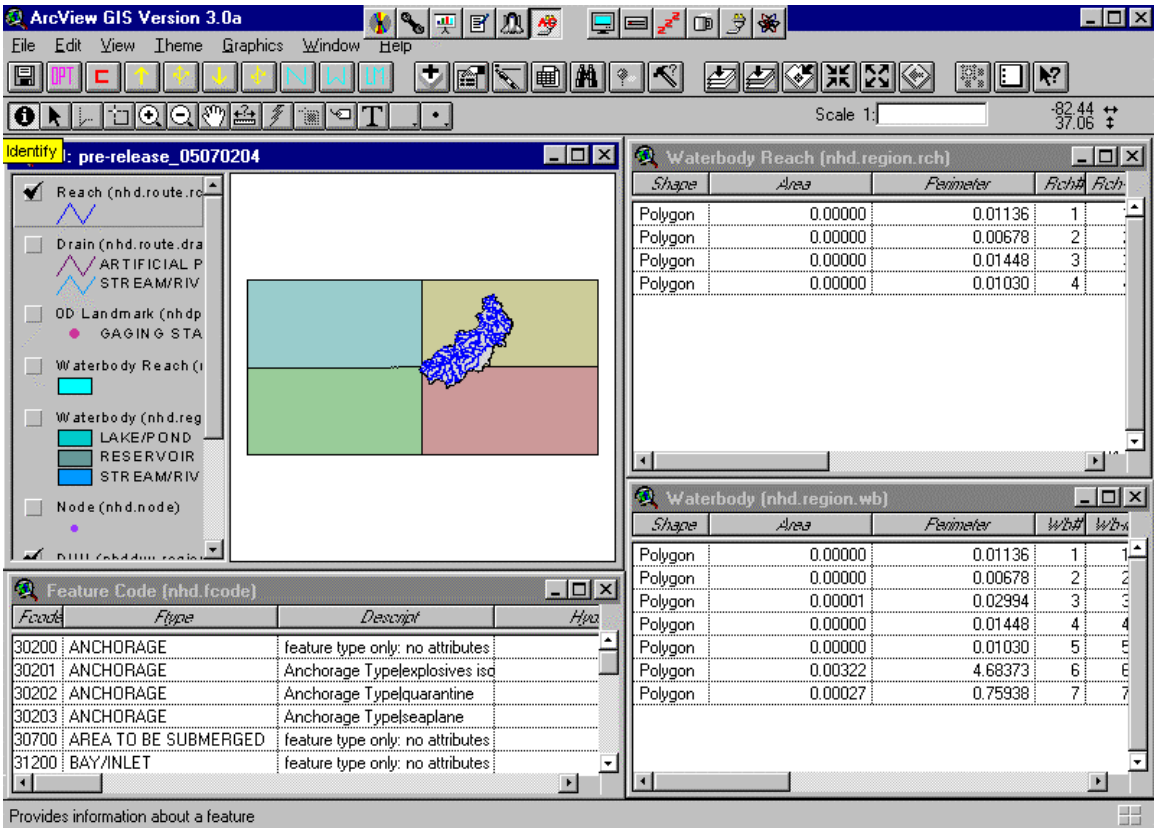
The feature tables for the NHD themes can be easily displayed using NHDView buttons that have been added to the ArcView button bar. In order to manage the screen real estate, the NHD feature themes have been divided into three groups: Network, Waterbodies, and Landmarks. Each group has a button on the button bar that, when pressed, tiles the feature tables for the themes in that group around the View window.

To display the tables related to the stream network themes, use the  button. This displays the feature tables for the themes NHD.route.rch (reach routes), NHD.route.drain (basic feature routes), and NHD.node (underpasses, if present). In addition, the NHD.rflow table is displayed twice. The left-hand copy (labeled 'Incoming Flow') is linked to the NHD.route.rch theme in the view via COM_ID_2 in NHD.rflow. When you select a reach, the 'Incoming Flow' table highlights the flow table entries that show which reaches flow into the selected reach. The right-hand copy (labeled 'Outgoing Flow') is linked to the NHD.route.rch theme in the view via COM_ID_1 in NHD.rflow. When you select a reach, the 'Outgoing Flow' table highlights the flow table entries that show which reaches flow out of the selected reach. The NHD.fcode table is displayed in the lower left corner and is highlighted whenever an NHD.route.drain feature is selected.

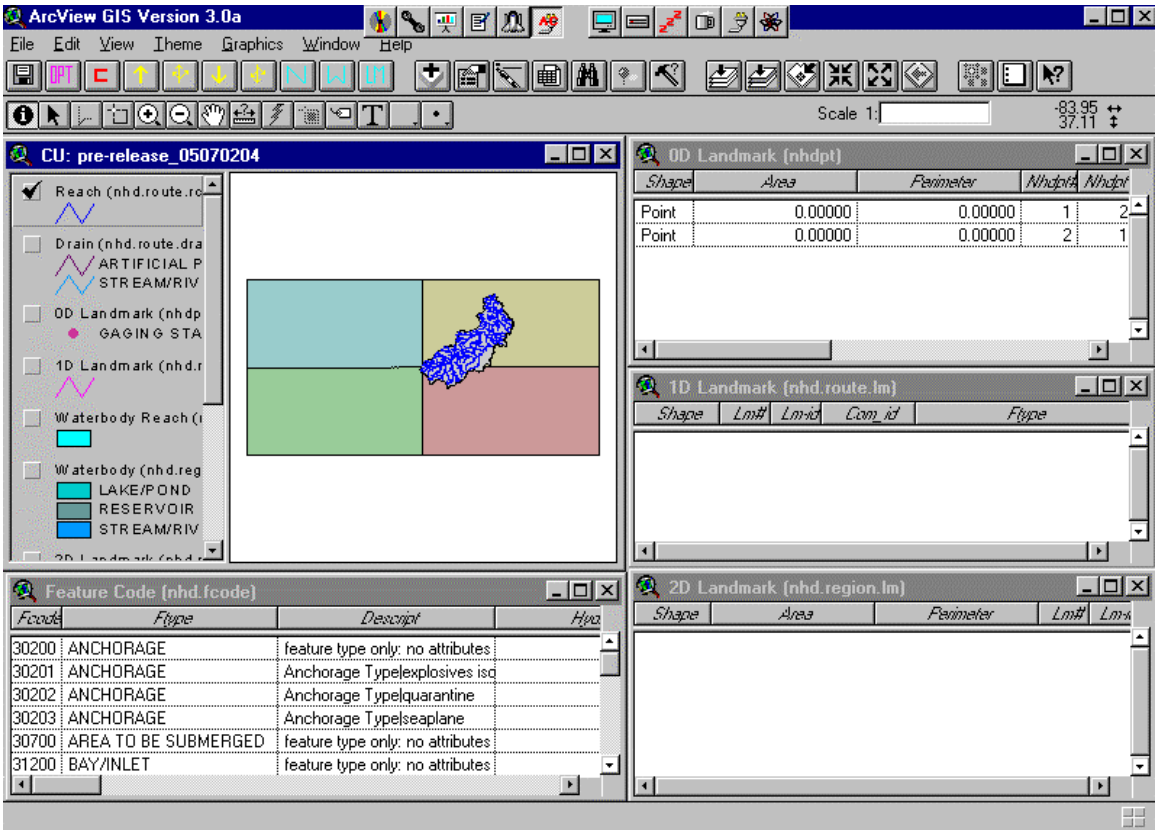
Note that the stream network tables display is the default display when a workspace is first opened with NHDView. This view is shown in the following figure:



To display the tables related to waterbody themes, use the  button. This displays the feature tables for the themes NHD.region.wb (waterbody basic features) and NHD.region.rch (waterbody reaches). The NHD.fcode table is displayed in the lower left corner and is highlighted whenever an NHD.region.wb feature is selected. The display for the waterbody tables is shown in the following figure.



To display the tables related to landmark themes, use the  button. This displays the feature tables for the themes NHDPT (point landmarks), NHD.route.lm (linear landmarks), and NHD.region.lm (area landmarks). The NHD.fcode table is displayed in the lower left corner and is highlighted whenever an NHDPT or NHD.route.lm or NHD.region.lm feature is selected. The display for the landmark tables is shown in the following figure.

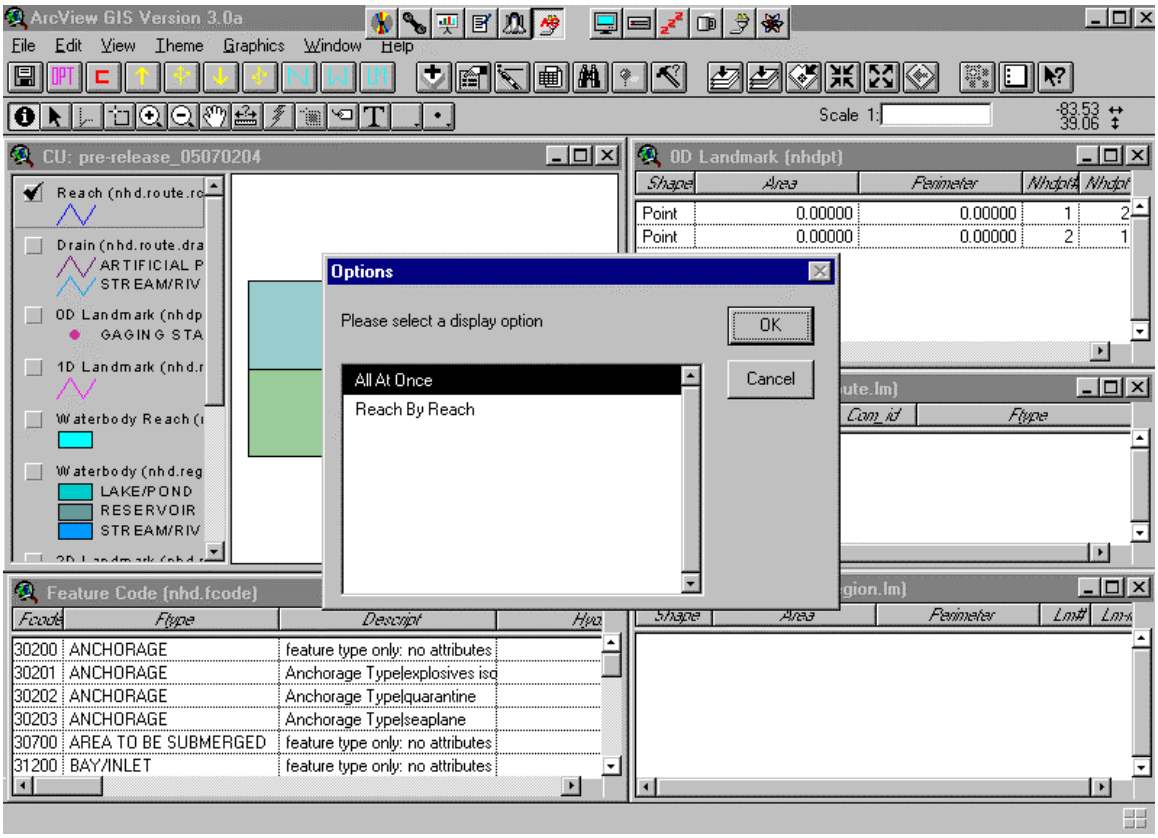


In addition to the feature table displays, NHDView enables you to select a reach and then navigate either upstream or downstream through the reach network. When navigating upstream you can choose to include tributaries or not. When navigating downstream, you can choose to include divergences or not.

The steps for performing a navigation are:

1. Select a Reach: Make the 'Reach' theme active. Chose the ArcView 'Selection' tool. Point to and select a reach. You must select one and only one reach. You may wish to zoom in to select the reach. If so, you will probably wish to zoom back out before you perform the navigation.

2. Select a display mode: The reaches navigated can be highlighted one-at-a-time or all-at-once. Pressing the OPT button will display an option box (see below) that allows you to change the display mode. Once a display mode is selected, it will be in effect until a different display mode is selected. There is no need to set the display mode for each navigation. If you are doing a long navigation (i.e. many reaches), the one-at-a-time mode can be slow depending upon the speed of your workstation. The default display mode is all-at-once. The currently selected mode is highlighted in the option box.



Although it is not mandatory, you will probably want to have the network tables displayed while you perform a navigation. If you have waterbody or landmark tables displayed, you will not see the network tables highlight with the navigation results. The network tables can be displayed by pressing the N button. Also, if you have turned the display for the reach theme off, you should turn it on before performing a navigation.

3. Select the navigation mode, perform the navigation and display the navigation results. For:

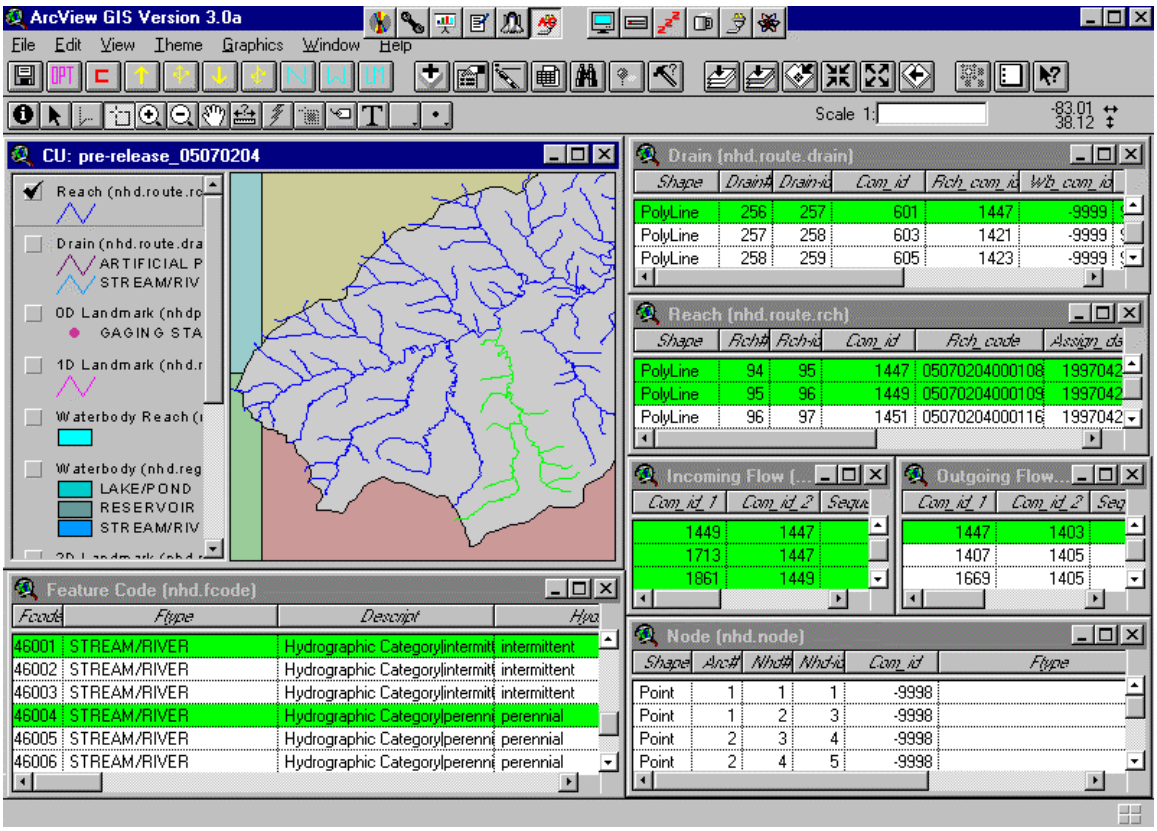
   Upstream mainstem only, press 

   Upstream with tributaries, press 

   Downstream mainstem only, press 

   Downstream with divergences, press 

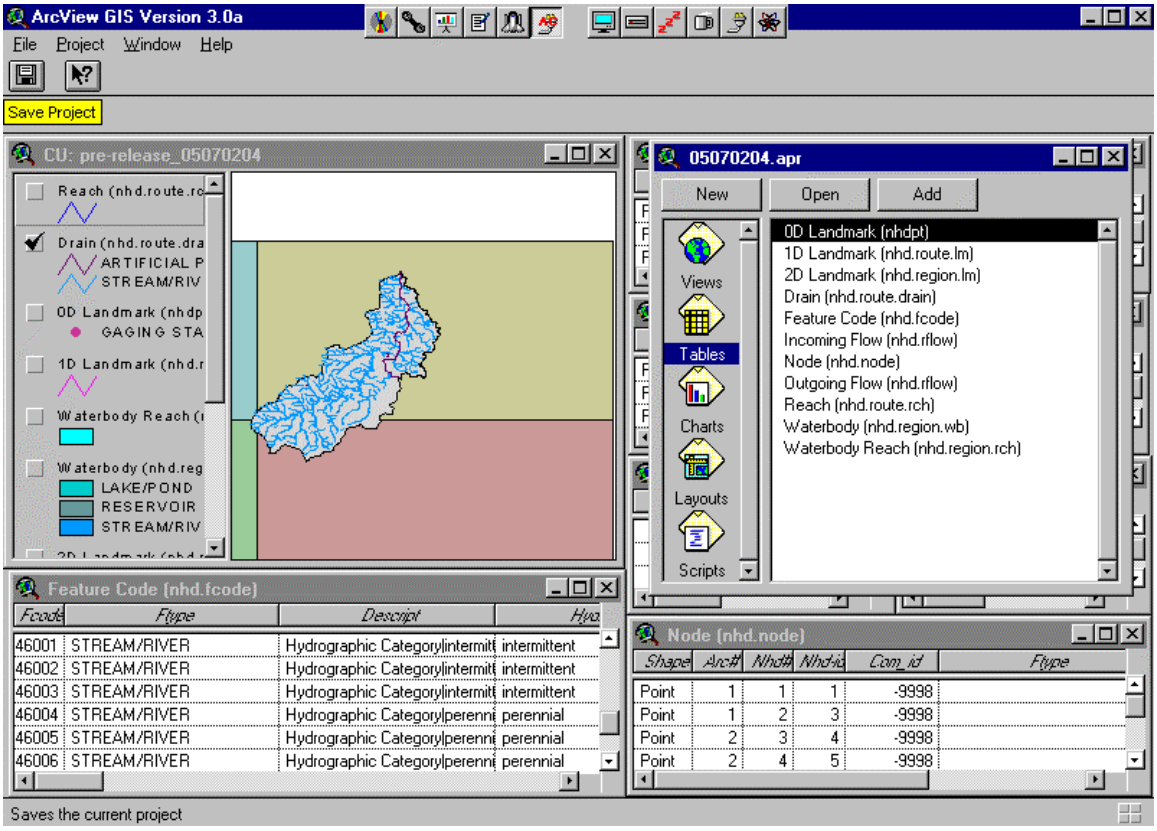
   Once a navigation mode button is pressed, the navigation is performed and the results are displayed (see below). When the navigation is being performed the cursor is an hour glass. As soon as the navigation is complete the results are displayed.



   Note: Navigation with tributaries is performed by stream level. First the mainstem is traversed, then the tributaries to the mainstem, then the tributaries to the tributaries, etc.

4. You may clear the navigation results from the display by pressing the  button.

When you are finished with a workspace in NHDView, you may close it. To do this, click on xxxxxxxx.apr from ArcView's WINDOW menu. This will activate/open the project window (see figure below). The project window must be the active window to open or close NHDinARC workspaces. Finally, select 'CLOSE NHDINARC Workspace' from ArcView's FILE menu. This will close the currently displayed workspace.



After closing an NHDinARC workspace, you will be returned to the project called NHDView.apr and you may open another workspace.

Troubleshooting

NHDView creates many table links. Depending upon the combination of functions that you perform in NHDView, ArcView may begin to behave badly and the project may become unstable. This is due to known problems with ArcView and is usually manifested in the links between the tables. If the number of records that get selected from a table is either a lot more or a lot less than expected, the project is probably unstable. If you detect that this is happening, simply close NHDView, reopen NHDView, and again open the NHDinARC workspace that you were using. If you continue to experience problems, you may need to restart ArcView.

Problems or enhancement suggestions may be reported to Jen Hill at jrh@hscnet.com or Cindy McKay at ldm@hscnet.com. Before reporting problems, please confirm that you are running the current version of NHDView by checking the nhd.usgs.gov Web site. You can determine which version you have by looking at the 'About NHDView' option on the ArcView HELP menu.